

# Watershed Protection Act Guidance Document

For Applicants of Advisory Rulings, Determinations  
of Applicability, Variances, and Exemptions of  
Tributaries

Massachusetts General Laws Chapter 92A ½  
350 CMR 11.00



March 2006

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Massachusetts Department of Conservation and Recreation  
Division of Water Supply Protection  
Office of Watershed Management

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## 1. The Watershed Protection Act – In Brief

The Watershed Protection Act (WsPA), in order to protect the quality of the Department of Conservation and Recreation/Massachusetts Water Resources Authority public water supply, regulates land use and activities within critical areas of the Quabbin Reservoir, Ware River and Wachusett Reservoir watersheds. This 1992 state law (Massachusetts General Laws Chapter 92, 107A, which was revised as MGL Chapter 92A ½; 350 CMR 11.00) applies only in towns and cities located within these three watersheds, and only to lands which are near specific water features in those communities. This Guidance Document provides details on the Watershed Protection Act and the processes used for its implementation. It is intended to assist the public with complying to the Act's regulations.

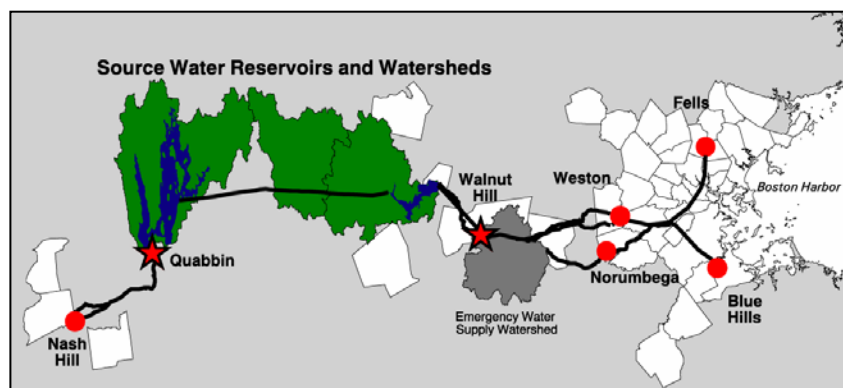
WsPA protects the quality of these drinking water sources by establishing two buffer zones around hydrologic resources. Within the most critical zone, the Primary Protection Zone, all physical alteration of the land is banned. Alterations are allowed in the Secondary Protection Zone, however WsPA bans specific activities which pose a high risk of degrading water quality. There are several categories of exemptions which the law allows despite these restrictions. To determine whether an activity is allowed under the Watershed Protection Act, a landowner may apply for watershed determinations as explained in Section 4.



Quabbin Reservoir is one of the sources of drinking water protected by the Watershed Protection Act

The provisions of WsPA are carried out by the Department of Conservation and Recreation's Division of Water Supply Protection, Office of Watershed Management (DCR/DWSP/OWM), an environmental agency of the Commonwealth of Massachusetts. The Office, formerly known as the Metropolitan District Commission Division of Watershed Management, was originally created in 1984 at the same time as the Massachusetts Water Resources Authority (MWRA), with the responsibility of maintaining and protecting the water supply and associated watershed lands (MWRA provides, among other duties, water treatment and delivery). The Office's name was changed with the 2003 merger of the MDC and the Department of Environmental Management into the Department of Conservation and Recreation (DCR). DCR administers WsPA through its Wachusett Reservoir and Quabbin Reservoir field offices, with assistance from the Boston OWM office and the DCR General Counsel.

DCR works closely with local boards on land use issues, but DCR (not the local communities) bears responsibility for implementation of the WsPA.



The DCR/MWRA water sources supply drinking water to 2.5 million people in Massachusetts. This map shows the distribution system, including the communities that receive this water, treatment plants (stars), covered storage facilities (circles) and major aqueducts/pipelines.

WsPA is one tool among many used by DCR to protect the drinking water supply for approximately half of the state's citizens. Other DCR activities include a land acquisition program, wildlife management, and sewer and on-site septic system programs. The Watershed Protection Plans for Wachusett Reservoir, Quabbin Reservoir and the Ware River describe these programs in detail and also contain the goals and objectives of the

Office of Watershed Management. For copies of these plans and further paper or electronic information, see Resources and References at the end of this document.

## **2. Land Affected by the Act**

WsPA regulates land situated within 400 feet of the reservoirs, tributaries and surface waters, as well as land within flood plains, over some aquifers, and within bordering vegetated wetlands inside the Quabbin Reservoir, Ware River and Wachusett Reservoir watersheds. The tributaries, surface waters, flood plains, and aquifers are identified with information collected by MassGIS (the Geographic Information Systems office of the Commonwealth) from United States Geological Survey maps. Bordering vegetated wetlands are identified in a manner consistent with local Conservation Commission and DEP determinations.



Choices made about land use and development practices affect the water quality in rivers and reservoirs, such as the Wachusett Reservoir.

DCR regulates land near its water supplies because many aspects related to the use and development of land affects the quality of nearby streams, which then flow into the reservoirs and other water supply sources. Type of development, density, amount of paved surface, and proximity to the water contribute to the amount and types of pollutants in a stream. It is desirable to preserve a buffer zone beside open water, and limit impervious surface over an aquifer; however, physical conditions on the land may allow for different rules depending on specific site factors. Utilizing careful approaches to land use and development benefits both local and regional water supplies.

## **3. Watershed Protection Act Implementation**

### ***A. WsPA Application Questions***

In order to decide whether an application under WsPA is necessary for a particular project, four questions need to be answered:

#### ***1) Is the property in a community that contains land within the DCR/MWRA watersheds?***

Twenty-six municipalities are within the Quabbin Reservoir, Ware River, and Wachusett Reservoir watersheds to a greater or lesser degree. Some of the towns listed below have most of their acreage within one or two of those watersheds; others have only a few private parcels. If the property is not within one of these 26 towns, it is not affected by the Watershed Protection Act:

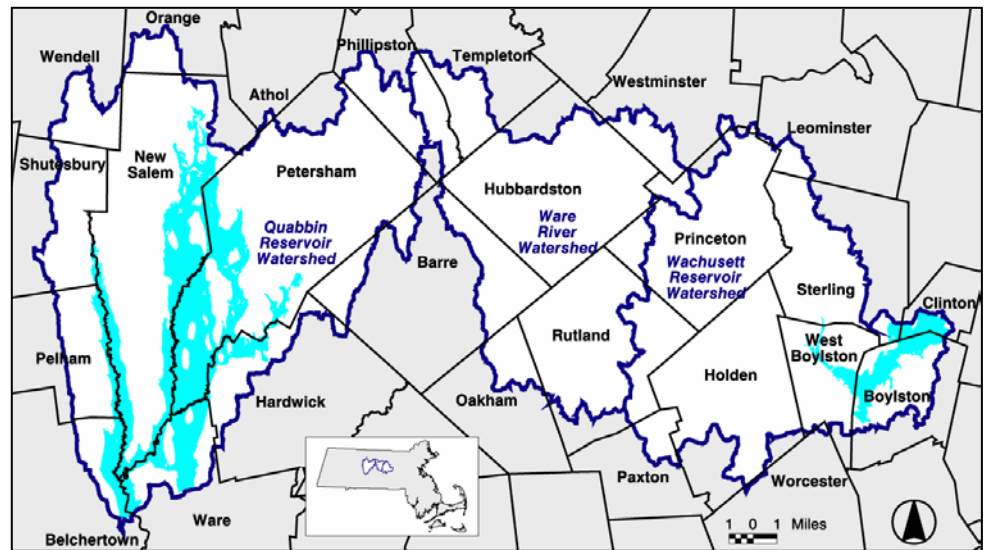
Athol	Hardwick	Oakham	Phillipston	Templeton	Westminster
Barre	Holden	Orange	Princeton	Ware	Worcester
Belchertown	Hubbardston	Paxton	Rutland	Wendell	
Boylston	Leominster	Pelham	Shutesbury	West	
Clinton	New Salem	Petersham	Sterling	Boylston	



## 2.) Is the property within the DCR watersheds?

A watershed is the basin within which water flows to the source (stream, wetland, lake or pond). The three active DCR water supply watersheds are shown on the right.

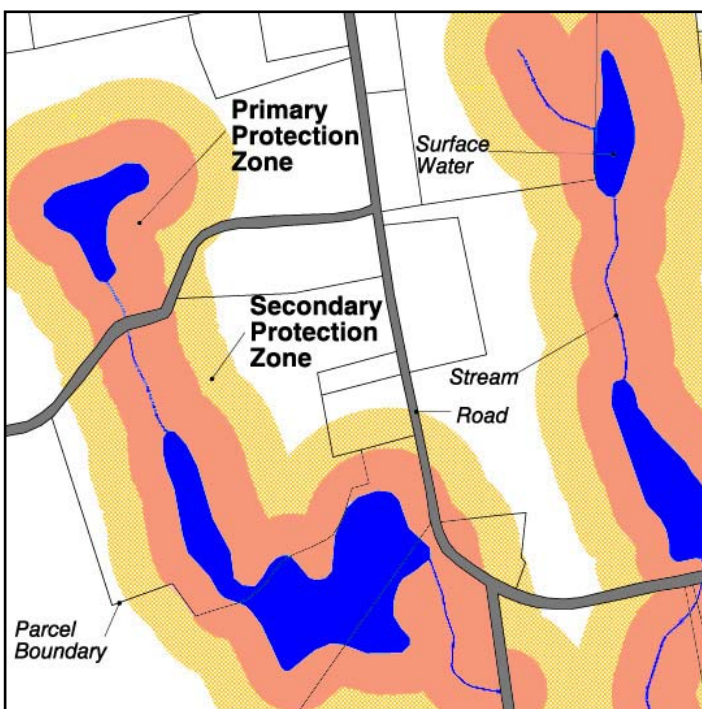
It may be obvious from the map (if, for example, the property is in Athol near the border with Orange) that the property is not inside the DCR water supply watersheds. Otherwise, consult the Watershed Protection Act maps (available at town halls, DCR watershed field offices, and online at [www.mass.gov/dcr/waterSupply/watershed/wspa.htm](http://www.mass.gov/dcr/waterSupply/watershed/wspa.htm)) to determine close cases.



The WsPA Watersheds: Quabbin Reservoir, Ware River, and Wachusett Reservoir.

## 3.) Is the property in an affected zone?

Two protection zones are established by WsPA, based on proximity to water features. The Primary Protection Zone is within 400 feet of the reservoirs' shoreline and 200 feet from tributaries and surface waters. The Secondary Protection Zone is the area between 200 and 400 feet from tributaries and surface waters, on land within flood plains, over some aquifers and within bordering vegetated wetlands.



The WsPA Protection Zones

Watershed Protection Act maps are available at each watershed community's Town Hall and the DCR watershed field offices. There is also an online data viewer, developed in association with MassGIS, that provides a searchable database of affected areas; it can be found at [www.mass.gov/dcr/waterSupply/watershed/wspa.htm](http://www.mass.gov/dcr/waterSupply/watershed/wspa.htm) under the headings "Protected Zones and Restrictions" or "Further Information." These maps show the boundaries of individual parcels and the Protection Zones associated with various water features. The maps also show roads and other location identifiers, so that in most cases it is possible to locate the property in question, and determine whether part of it is within a Protection Zone. However, many parcels have been subdivided since the lines were computerized, and all maps contain some errors. If uncertain, a property owner can file an application, which will allow DCR staff to determine for certain whether the property is outside WsPA jurisdiction.

**4.) *Is the activity proposed for the property prohibited under the WsPA?***

“Alterations” banned in the Primary Protection Zone include:

- Draining
- Dumping
- Discharging
- Excavating
- Filling
- Grading
- Reconstruction
- Paving
- Changing run-off characteristics
- Diversions

In the Primary Protection Zone, the WsPA bans any alteration, which is broadly defined to include not only construction and paving but excavating, filling and grading, and changing of run-off characteristics.

Internal reconstruction, roof repairs, and minor landscaping that does not change run-off characteristics is not considered to “alter” the land. The brochure, “Landscaping and the Watershed Protection Act” details the exemptions for limited landscaping activities. Proponents of projects that entail extensive landscaping or any other alteration (see side box) are encouraged to discuss their plans with DCR staff.

Several kinds of land uses are banned in the Secondary Protection Zone, including: storage, disposal or use of toxic, hazardous and other materials; alteration of bordering vegetated wetlands; and certain densities of development. Changes in use are not necessarily outside the range of actions prohibited by WsPA. For a complete list of prohibited activities, see 350 CMR 11.04(3)(b)2.

There are a number of exemptions to the Watershed Protection Act which allow prohibited activities to occur in the regulated areas. See Section 4 for a more information on exemptions.

**B. *WsPA Monitoring and Enforcement Procedures***

The Office of Watershed Management makes every attempt to allow property owners to conform to the law without enforcement action. Development in the watershed communities is monitored, however, by means of staff attendance at meetings of municipal boards and committees, review of legal advertisements and other information in local newspapers, as well as windshield surveys. Apparent WsPA violations will be identified to owners. If legal compliance does not appear to be forthcoming, further enforcement action may be taken by DCR and the Department of Environmental Protection, which has jurisdiction to enforce WsPA violations.

**C. *Other Laws and Regulations***

Projects that are exempt under WsPA, or receive a *Variance* decision from DCR, are still subject to other laws. The Office of Watershed Management’s general rules and regulations (350 CMR 11.09) prohibit any type of use or development that degrades water quality. Other state laws and the regulations and bylaws of local boards often affect land use development. A list of some significant laws is included in Section 6. Compliance with these laws is ultimately the responsibility of the landowner.

**Why is July 1, 1992 an Important Date?**

The Watershed Protection Act was passed by the Legislature in May of 1992. The regulations provides a series of exemptions to the Act for uses, structures, facilities and lots in existence at the start of the Fiscal Year – July 1 - that this new law was enacted.

## 4. Watershed Protection Act Applications

There are four different applications that can be submitted to DCR to rule on how the Watershed Protection Act may regulate a proposed activity: *an Advisory Ruling, a Determination of Applicability, an Application for Variance, and Request for Exemption of a Tributary*. Table 1 provides a brief outline of these applications.

**Table 1**  
**Watershed Protection Act Applications**

Type of Application <i>[What to Submit]</i>	DCR Response <i>[Form of Response]</i>
<b>Advisory Ruling</b> <i>[Letter from Owner]</i>	Informal indication of whether property is affected, if activity is prohibited, if exemption applies. <i>[Letter from DCR]</i>
<b>Determination of Applicability</b> <i>[WsPA Form 1]</i>	Formal, recordable indication of whether property is affected, if activity is prohibited, if exemption applies (may include water quality finding). <i>[WsPA Form 2]</i>
<b>Variance</b> <i>[WsPA Form 3]</i>	Decision whether physical characteristics allow law to be varied for this project without water quality degradation or harm to public good. <i>[WsPA Form 4]</i>
<b>Exemption of a Tributary</b> <i>[WsPA Form 5]</i>	Decision whether several factors allow tributary or portion to be exempted without risk of water quality degradation or harm to public good. <i>[WsPA Form 4]</i>

### ***A. Advisory Rulings and Determinations of Applicability***

*Advisory Rulings* are informal agency opinions as to the applicability of the Act to a property or a proposal. Generally, they are based on submission of information less extensive than that for a *Determination of Applicability*. *Advisory Rulings* are authorized by the state Administrative Procedure Act (MGL Ch. 30A, §8).

*Advisory Rulings* are discretionary; administrative agencies do not have to make such a decision, although it is usually in the best interest of all parties to provide this type of ruling. A situation in which DCR might not give an *Advisory Ruling* is if substantial information is necessary to make a determination about a project. In that case, staff will request an application for a *Determination of Applicability*.

*Determinations of Applicability* result in a formal, recordable answer from DCR on the applicability of the Watershed Protection Act to a property or a proposal. **In either case, consultation with DCR staff is advised to avoid unnecessary paperwork.**

Both an *Advisory Ruling* and a *Determination of Applicability* require the following information:

- A copy of the current assessor's map showing your property or its sheet and parcel number.
- A copy of the owner's deed.
- A copy of any plans or surveys that are available.
- Any other information that may be useful in making a ruling.

For an *Advisory Ruling*, send a letter to the appropriate DCR office for the town in which your property is located (see Section 6). Submit **Watershed Form 1** to request a *Determination of Applicability*. If the application is to remove the property from the List of Affected Parcels, please include a Land Surveyor's determination of location to show that property was improperly identified as under WsPA jurisdiction.

There are three questions which may be answered by an *Advisory Ruling* or a *Determination of Applicability*. Please note that more than one question can be answered with a single application.

### 1) Is the property at issue subject to the Watershed Protection Act?

A *Location Determination* may be necessary if property is not clearly in or out of a WsPA regulated area. Additionally, an owner may believe that property shown as regulated on the map is actually outside the regulated area, since the mapped locations of water features are subject to field checking. Some owners may want recordable confirmation that their properties are not subject to the Act.

WsPA Maps and the List of Affected Parcels available at Town Halls or online at [www.mass.gov/dcr/waterSupply/watershed/wspa.htm](http://www.mass.gov/dcr/waterSupply/watershed/wspa.htm) do not include some properties which would be regulated solely on the basis of bordering vegetated wetlands, affected public properties, and properties for which individual parcel information was ambiguous. The maps are a combination of different sources of information which were originally collected for other purposes. Field checking may reveal that parcels not shown as affected are in fact under WsPA jurisdiction, or conversely, property that is included is actually outside the affected area.

### 2) Is the proposed activity prohibited?

A *Conformance Determination* is the appropriate procedure for an owner who believes that the proposed project, while within affected areas, does not violate the restrictions in WsPA. For instance, an activity in the primary zone that did not rise to the level of an "alteration" might be in conformance (or "not prohibited"). Secondary zone residential construction within the stated density restrictions would also come within this category.

### 3) Exemption Determination

A *Determination of Applicability* is the mechanism to use if the landowner believes that a proposed use or activity on regulated property falls within one of the exemptions to the Act, listed at 350 CMR 11.05. See the box below for some common WsPA exemptions.



### **Most Common WsPA Exemptions**

**Existing Uses:** Uses, structures and facilities lawfully existing as of July 1, 1992.

**Changes to Structures:** Reconstructions, extensions or physical changes to lawfully existing structures that do not degrade water quality.

**Home on Existing Lot:** Construction of a single-family dwelling on an existing lot.

**Single subdivision:** Division of an owner-occupied lot to create one additional lot for a single-family dwelling.

### **Other WsPA Exemptions**

**Agricultural:** Maintenance or improvement of agricultural land; changes in crops; use of new technologies; conversion of land to agricultural use.

**Environmental Agency:** Work of DCR and MWRA; clean-up, prevention and mitigation of hazardous materials releases.

**Transportation:** Maintenance, repair, replacement or reconstruction of public roads and rails; construction of new public highways and rails.

**Utilities:** Maintenance, repair or expansion of public utility structures or facilities; construction of new municipal sewage treatment facility or water system; construction of new dwellings to be connected to existing sewer systems (exempt only from the density limitations).

## ***B. Variances***

Granting of a *Variance*, as in other regulatory areas (such as local zoning), means that DCR agrees that the law established by the Legislature may be *varied*. The law as set forth can only be varied under special circumstances, which are clearly outlined and consistently followed. Under the WsPA, in particular, there is a presumption that varying the law is against the Act's purposes. A WsPA *Variance* may be granted if an applicant can show that the *Variance* will not result in impairment of the quality of water in the watersheds, or substantial detriment to the public good.

As described in the Regulations, 350 CMR 11.06(3) and (4), *Variance* determinations will be made on a case-by-case basis, with each application considered individually. The Act establishes parameters that are to be used by DCR and DEP in making a determination (see Section 5, Technical Information for *Variance* and *Exemption of a Tributary* Applications). The regulations issued under the Act specify the information an applicant is required to provide regarding those parameters. The sequence of events following a request for a *Variance* decision is shown in the box below.

Submit **Watershed Form 3** to apply for a *Variance*. An applicant must be the owner (or authorized representative) of an interest in real property within the area affected by the Act. Upon submitting all necessary information, DCR has 30 days to schedule a hearing on the *Variance* application. Notice of the time and place of the public hearing must be provided to the applicant and published in a local newspaper at the applicants expense.

Please note that the Massachusetts Environmental Policy Act (MEPA) requires proponents of a WsPA *Variance*—*except projects that are solely a single-family dwelling*—to file an Environmental Notification Form (ENF) with the Executive Office of Environmental Affairs (301 CMR 11.03(4)(b)(6)). The WsPA *Variance* application will not be deemed complete, and thus the official counting of 30 days towards holding the *Variance* hearing, until DCR receives a copy of the EOEPA Secretary's Certificate stating that MEPA requirements have been fulfilled. Please see 301 CMR 11.03 for the complete list of MEPA review thresholds that require filing an ENF; contact the MEPA Office at (617) 626-1020 or [www.mass.gov/envir/mepa/index.htm](http://www.mass.gov/envir/mepa/index.htm).

To grant a *Variance*, DCR must find that such a grant will not cause "substantial detriment to the public good and without impairing the quality of water in the Watersheds." It is up to the applicant to demonstrate this standard. The project proponent must overcome a presumption that granting a *Variance* is contrary to the achievement of the purposes of the Act.

Watershed Protection Act  
Guidance Document

If a finding of no impairment of water quality and no substantial detriment to the public good is made, then DCR may grant a *Variance* with respect to particular uses or structures. A *Variance* with respect to crossing of tributaries and bordering vegetated wetlands must be granted if it is found that there is no impairment of water quality and substantial detriment to the public good.

Within 30 days after the close of the public hearing, DCR must issue a written decision. If a *Variance* is granted, reasonable conditions, safeguards and limitations may be imposed on the decision. If the *Variance* is denied, the written decision must contain an explanation as to why it was not approved.

A *Variance* denial may be appealed (see 350 CMR 11.06(i)). The procedures for an adjudicatory hearing are set by 801 CMR 1.00 *et seq.*

Send requests for a *Variance* appeal to:

Commissioner  
Department of Conservation and Recreation  
251 Causeway St.  
Boston, MA 02114

and

Director  
Division of Water Supply Protection  
Department of Conservation and Recreation  
251 Causeway St.  
Boston, MA 02114

**Steps to a WsPA *Variance* Decision**

1. Owner or representative submits application (Form 3).
  - 1A. If project is not a single family dwelling, owner or representative submits an Environmental Notification Form with the Executive Office of Environmental Affairs. **NOTE:** The *Variance* application will not be considered complete by DCR until a Certificate is obtained from EOEa stating all Massachusetts Environmental Policy Act requirements are fulfilled.
2. Initial evaluation by DCR staff.
3. Request, if needed, for more information to complete application.
4. Set hearing date.
5. The WsPA *Variance* Hearing
  - Regional Director (Quabbin or Wachusett) is hearing officer.
  - Hearing officer reads notice of hearing and explains purpose.
  - Staff give their report and recommendation.
  - Proponents of project may speak.
  - General public, opponents or supporters, may speak.
  - Close of Hearing
6. Finding by DCR within 30 days.
7. Decision may be appealed within 21 days.



Winsor Dam at Quabbin Reservoir

### ***C. Exemptions of Tributaries***

The Watershed Protection Act contains a process to completely remove a tributary from its jurisdiction. Because the effect is to allow whole portions of a tributary and surrounding lands to be free from the Act's restrictions, an *Exemption of a Tributary* requires both a public hearing and more information than for a *Variance*.

In the case of an *Exemption of a Tributary*, DEP must be consulted, and DCR and DEP must jointly determine that the exemption poses no significant risk to the quality of the water. The standard is stricter than that for a *Variance*.

Another difference between other WsPA filings and *Exemption of a Tributary* is the parties which are allowed to submit an application. While *Advisory Rulings*, *Determinations of Applicability*, and *Variances* can only be filed by the owner or authorized representative, a request for *Exemption of a Tributary* may be made by any of the following:

- The owner of an interest in real property within the area affected by the Act.
- The Board of Selectmen, City Council, Mayor, Planning Board, or Conservation Commission of any city or town which would be affected by the exemption.
- Any state agency or regional planning agency.
- The Governor or any member of the General Court.

**Watershed Form 5** is the application to submit to DCR for *Exemption of a Tributary*. By statute, DCR and DEP must examine:

- The Tributary's rate of flow, slope and soil characteristics.
- The Tributary's proximity to the reservoir or the Ware River above the Ware River Intake.
- The existing level of water quality as of the initial filing date of the application.
- The current degree of development.

Within 30 days of filing of an application for *Exemption of a Tributary*, DCR must hold a public hearing, having given notice of the time and place to the applicant and published in a local newspaper. Within 30 days after the close of the public hearing, DCR must issue a written decision. If an *Exemption of a Tributary* is granted, DCR may impose conditions, safeguards and limitations on the decision. If it is denied, the written decision must contain an explanation; the decision may be appealed. See 801 CMR 1.00 *et seq.* for appeal procedures.

## **5. Technical Information for Variance and Exemption of a Tributary Applications**

While it is not possible to give definitive standards indicating automatic granting or denial of a *Variance* or *Exemption of a Tributary*, DCR has identified numerical levels of each factor that give some indication of whether there will be substantial detriment or impairment of water quality. The numerical levels fall into three categories:

- 1) Low likelihood of substantial detriment to the public good or impairment of water quality.
- 2) Potential for substantial detriment to the public good or impairment of water quality.
- 3) High likelihood of substantial detriment to the public good or impairment of water quality.

Applicants for a *Variance* or *Exemption of a Tributary* will be asked to submit data for each of these factors, and may be asked to supply data for other water quality characteristics as well.

These categories do not establish a presumption as to granting of a *Variance* or *Exemption of a Tributary*. Though all of the listed factors indicate a low likelihood of substantial detriment or impairment of water quality, particular circumstances of the proposal or its physical context may indicate detriment or impairment despite what individual factors imply. The burden is on the applicant to establish from the data the conclusion that the proposed work will not pose a risk or impair water quality. Therefore, the three categories for *Variances* and *Exemptions of a Tributary*, set forth and explained below, are provided only as a general guide.

Some of the data required for *Variance* or *Exemption of a Tributary* applications may be available from existing data sources, which include DCR, DEP, the Natural Resources Conservation Service (NRCS) and the US Geological Survey (USGS). Owners of property considering applying for a *Variance* or an *Exemption of a Tributary* are encouraged to contact DCR to discuss available sources of data.

## A. *Variance Evaluations*

In order to evaluate a *Variance* request, DCR will review: 1) physical characteristics of the property; 2) existing stream water quality; and 3) the proposed activity and associated water quality impacts associated with use.

### 1) Physical Characteristics of the Property

The Act requires that DCR examine soils, slope and topography in deciding whether to grant a *Variance*. The proponent is required to supply data which characterize these physical characteristics for the property. The factors are set forth in Table 2, in categories which give general guidance as to the likelihood of significant risk to water quality.

**Table 2**  
**Watershed Protection Act – Variance Factors**

Variance Factor	Likelihood of Substantial Detriment or Impairment of Water Quality		
	LOW	POTENTIAL	HIGH
Soils: Erodibility, as defined by Natural Resource Conservation Service Soil Erosion Factors	Low erodible $K^* < .18$	Potentially highly erodible $.18 \leq K \leq .22$	Highly erodible $K > .22$
Soils: Percolation rate	More than 10 mpi**	Between 6 and 10 mpi, or equal to 10 mpi	Equal to/less than 6 mpi
Ground slope	Less than 3%	Equal to/more than 3% and less than 15%	Equal to/more than 15%
Stream slope	Less than 3%	Equal to/more than 3% and less than 10%	Equal to/more than 10%
Topography: Depth to groundwater	Equal to or more than 10'	Between 6' and 10'	Less than 6'
Topography: Depth to ledge or refusal	Equal to or more than 10'	Between 6' and 10'	Less than 6'
Topography: Distance to water features	More than 400'	Between 200' and 400'	Equal to/less than 200'

\* A factor of slope and fraction of fine soil particles.

\*\* minutes per inch.



### Explanation of Physical Characteristics:

Soils: The soils within the Watershed System have been extensively mapped according to erodibility, permeability and other characteristics by the United States Department of Agriculture Natural Resource Conservation Service. Erodibility and permeability are soil characteristics that greatly influence the degree of the pollution threat to the water supply. High erodibility increases the potential for sedimentation; pollutants can attach to water particles and thereby enter the water system. Therefore sediment loading to water resources, during construction and after changes in land use occur, can act as a substantial detriment to water quality. Generalized areas of high erosion potential were mapped for each region of the Watershed based on slope, soil type, and the vegetative conditions. Where necessary, additional factors of texture and drainage are considered.

General permeability of soils, measured by a percolation test, can indicate the ability of the soil to filter water directed into the ground from surface structures as well as from sanitary facilities. An intermediate percolation rate is considered most suitable for septic systems.

The location and results of deep hole observation pits or borings will verify soil characteristics, indicate the conditions to be encountered during construction, and provide data to establish the filtering capacity of the soil as indicated by depth to groundwater and refusal. Shallow depth bedrock or a seasonally high water table can cause pollutants to flow over the ground surface instead of being absorbed and treated by the soil.

Slope: The slope of the Watershed that is tributary to the water supply will influence the risk factor assessed to the area. Stormwater runoff flows and the pollution that is carried by this runoff are directly related to the slope of the watershed. Pollutants naturally collect on the surface of the ground during dry weather, and are then carried in the stormwater runoff during rain events. As slope increases, runoff velocity increases. The slope of the streambed is characteristic of the risk of pollution due to scour-induced streambed and bank erosion.



The Roger Lonergan Intake on the Ware River

Topography: Topographic characteristics of ground contour and vegetative cover are necessary to establish flow paths and flow types (sheet, rill, or concentrated), and to determine the rate, volume and erosion potential from stormwater runoff.

Proximity of the project to streams/wetlands indicate greater potential for substantial detriment or impairment of water quality. The further a site is from these resources, the less impact development will have on stream water quality.

### 2) Existing Stream Water Quality

The WSPA *Variance* application requires a statement of impact on water quality based on the information submitted to DCR. The statement may be based on soils, slope and topography only; in addition, the applicant may provide water quality data. If DCR cannot make a determination based on the soils, slope and topography data submitted with the initial application form, it may require water quality data. Some of the characteristics that would be required in a water quality analysis are given in Table 3.



**Table 3**  
**Watershed Protection Act - Water Quality Variance Factors**

Variance Factor	Likelihood of Substantial Detriment or Impairment of Water Quality		
	LOW	POTENTIAL	HIGH
Fecal Coliform level	Less than or equal to 20 org/100 ml	Less than or equal to 200, more than 20 organisms per 100 ml	More than 200 organisms per 100 ml
Turbidity	Equal to or less than 1 NTU	Less than or equal to 5 NTU, more than 1 NTU	More than 5 NTU
Phosphorus	Equal to or less than 25 µg/l	Less than/equal to 50 µg/l, more than 25 µg/l	More than 50 µg/l

### Explanation of Existing Stream Water Quality Factors

Fecal coliform: 20 organisms/100 ml is the Class A Surface Water Quality Standard (see the Surface Water Quality Standards cited at the end of this document). 200 organisms/100 ml is the Class B Surface Water Quality Standard.

Turbidity: Turbidity is measured in Nephelometric Turbidity Units; 5 NTU is the drinking water standard for source water in unfiltered supplies. 1 NTU is a value which is typically exceeded only by tributaries in developed subwatersheds in the DCR system, under non-storm conditions.

Phosphorous: The phosphorus figures reflect EPA recommended limits for streams and lakes.



The Quinnapoxet River, which flows into the Wachusett Reservoir

### 3) Proposed Activity and Associated Water Quality Impacts

Other characteristics also may be required, based on the specific use or activity for which a *Variance* is being requested. Table 4 sets forth some of these water quality considerations, in a matrix that shows which uses and activities are most likely to contribute to particular water supply threats. If a water quality analysis is required, the analysis must refer to the DEP Surface Water Quality Standards for Class A Surface Waters and Outstanding Resource Waters of the Commonwealth and, where applicable, the Massachusetts Ground Water Quality Standards. The analysis must show that water quality will not be impaired by the Structure, Use and/or Activity for which the *Variance* is being requested. In deciding whether the statutory standard of no substantial detriment to the public good or impairment of water quality has been met, DCR may need to take into account other regulations, such as DEP stormwater, Title 5, and wetlands protection regulations (see Section 6 for references)..

Table 4

**Watershed Protection Act  
Typical Water Quality Considerations for Granting Variances**

Restriction	IMPACTS		CONSTITUENTS						
	Surface Water	Ground Water	Solids	Phosphorous	Nitrate	Pathogens	Pesticides	Metals	Other Organics
<b>I. No Build</b>	✓	✓	✓	✓	✓	✓			
<b>II. Prohibited Uses and Activities</b>									
Private or Public Sewage Treatment Facility	✓	✓		✓	✓	✓			
Leach field < 4 ft. to groundwater	✓	✓		✓	✓	✓			
Storage of Liquid Petroleum	✓	✓							✓
Hazardous Waste	✓	✓					✓	✓	✓
Solid Waste	✓	✓		✓	✓	✓			
Storage of Road Salt		✓						✓	
Storage of Herbicides and Pesticides	✓	✓					✓		
Use of Herbicides and Pesticides	✓	✓					✓		
Storage of Manure	✓			✓	✓	✓			
Service of Boats or Vehicles	✓	✓							✓
Junk Yards	✓	✓						✓	✓
> 10% or 2500 sq. ft. impervious	✓		✓	✓	✓			✓	
Gravel Excavation < 6 ft. to Water Table	✓	✓	✓	✓	✓				
Altering of Bordering Vegetated Wetlands	✓		✓	✓	✓				
<b>III. Density Limits (Septic Loadings)</b>									
200 gallons/acre/day	✓	✓		✓	✓	✓			
Aquifers 100-300 gpm yields 1 bedroom/acre or 147 gal/acres/day	✓	✓		✓	✓	✓			
Aquifers > 300 gpm yield 1 bedroom/acre or 110 gal/acre/day	✓	✓		✓	✓	✓			

## B. Exemption of a Tributary Evaluations

Applicants for *Exemption of a Tributary* will be required to supply data regarding factors set forth in Table 5. Water quality monitoring in the stream for which the exemption is requested is required. At a minimum, DCR will require monthly sampling for a period of a year. DCR or DEP may require water quality sampling on a schedule which is more frequent than monthly, a period of sampling which extends beyond one year, and/or analysis of additional parameters than those outlined in Table 5.

**Table 5**  
**Watershed Protection Act**  
**Factors for Exemption of a Tributary**

Variance Factor:	Likelihood of Significant Risk to Water Quality		
	LOW	POTENTIAL	HIGH
Drainage Area (sq. mi.)	Less than 1	More than or equal to 1; less than 3	More than or equal to 3
Soils: erodibility, defined by NRCS Soil Erosion Factors	Low erodible $K^* < .18$	Potentially highly erodible $.18 \leq K \leq .22$	Highly erodible $K > .22$
Percolation Rate	More than 6 mpi** [ > 30 if septic]	Equal to/less than 6 mpi; more than 2 mpi	Equal to/less than 2 mpi
Stream Slope	Less than 3%	Equal to/more than 3%; less than 10%	Equal to/more than 10%
Proximity to Reservoir	Zone C	Zone B	Zone A
Fecal Coliform Level	More than 200 org/100 ml	Equal to/less than 200, more than 20 org/100 ml	Equal to/less than 20 org/100 ml
Turbidity	Equal to/less than 1 NTU	Equal to/less than 5 NTU, more than 1 NTU	More than 5 NTU
Phosphorus	Equal to/less than 25 µg/l	Equal to/less than 50 µg/l, more than 25 µg/l	More than 50 µg/l
Existing Development: % of Impervious Surface	More than 20%	Equal to/less than 20%, more than 10%	Equal to/less than 10%
Proposed Development: % of Impervious Surface	Equal to/less than 10%	Equal to/less than 20%, more than 10%	More than 20%

\* a factor of slope and fraction of fine soil particles.

\*\* minutes per inch.

Most of this information must be supplied both for existing conditions and for a hypothetical case of full build-out allowed by law if the exemption were granted. As with a *Variance*, the burden is on the applicant to show that the requested exemption will pose no risk to water quality.

## Explanation of Factors for Evaluating Exemptions of Tributaries

Flow rate: According to the Act, “rate of flow” is one parameter to analyze in deciding whether to allow an exemption. Streamflow is related to the size of the drainage area to a point in a stream. This is why drainage area is included in the table of factors to consider for evaluating exemptions. A generally accepted method for obtaining average stream discharge is to assume a one square mile, flat, moderately-developed drainage area discharges an average daily flow of one cubic foot per second. Smaller streams generally have less impact on water quality in a reservoir, due to their smaller contribution to the total volume of water in the system.

Soils and Slope: See explanations under Table 2.

Water Quality: See explanations under Table 3. For *Exemption of a Tributary*, however, water quality information must be supplied with the initial filing. **Watershed Form 5** gives details of what information must be provided. In evaluating existing in-stream water quality, DCR is less likely to exempt a pristine stream than a stream which already evidences impaired water quality. By the same token, DCR is not likely to exempt an existing impaired stream in any manner that would exacerbate the current degree of impairment.

Proximity to Reservoir: The closer a use is to a reservoir, the greater the risk of adverse impact to water quality. DCR will use the Protection Zones defined by DEP Division of Water Supply in its Watershed Resource Protection Plan Policy:

Zone A: These areas fall within 400 feet of the 100-year floodplain elevation as delineated on the Federal Emergency Management Agency (FEMA) maps, of all 314 CMR 4.00 Class A surface waters. These waters are not limited to the tributaries designated in the Watershed Protection Act. Streams or wetlands found to be on the site upon field investigation by DCR staff may be designated to be in this category. According to DEP’s criteria, Zone A has the highest potential for significant risk to water quality.

Zone B: These areas are located one-half mile upgradient from the Zone A boundary or the watershed boundary, whichever is less.

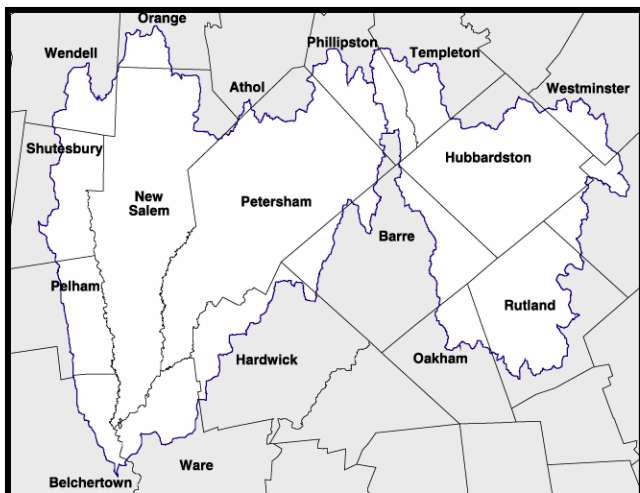
Zone C: These areas encompass the remaining watershed not designated either Zone A or Zone B.

These zones have been mapped and are included in the Watershed Resource Protection Plans for the Quabbin/Ware and Wachusett Watersheds.

Development: Greater percentages of imperviousness in the drainage cause more runoff, and greater nonpoint source pollution. The Act prohibits the rendering impervious of more than 10% of any lot in the Prohibited Uses and Activities zone. The 20% impervious criterion reflects typical developed density associated with one-acre zoning in residential districts.

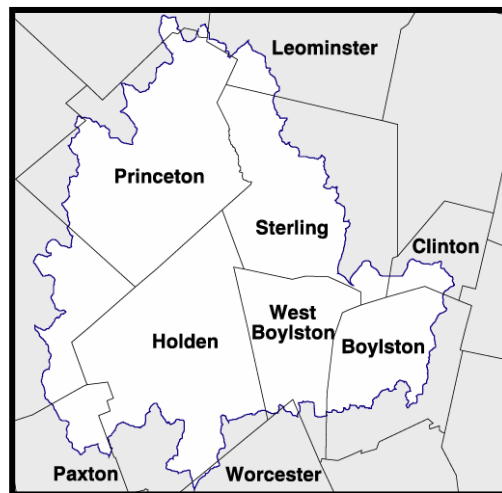
## **6. Resources and References**

### ***A. Further Information on the Watershed Protection Act***



#### **Quabbin Reservoir and Ware River Watersheds**

DCR, Division of Water Supply Protection,  
Office of Watershed Management, Quabbin Reservoir  
Attn: Environmental Planning  
485 Ware Rd.  
Belchertown, MA 01007  
(413) 323-6921 x501



#### **Wachusett Reservoir Watershed**

DCR, Division of Water Supply Protection,  
Office of Watershed Management, Wachusett Reservoir  
Attn: Environmental Planning  
180 Beaman St.  
West Boylston, MA 01583  
(508) 792-7423 x314 or x311

Watershed Protection Act regulations, forms, and online WsPA data viewer are available on the DCR website, [www.mass.gov/dcr/waterSupply/watershed/wsapa.htm](http://www.mass.gov/dcr/waterSupply/watershed/wsapa.htm).

### ***B. Massachusetts Department of Environmental Protection Regional Offices***

DEP Central Regional Office  
627 Main Street  
Worcester, MA 01608  
(508) 792-7650

DEP Western Regional Office  
436 Dwight Street  
Springfield, MA 01103  
(413) 784-1100

[www.mass.gov/dep](http://www.mass.gov/dep)

### ***C. Massachusetts Environmental Policy Act***

Executive Office of Environmental Affairs  
100 Cambridge St.  
Boston MA 02114  
617-626-1020

[www.mass.gov/envir/mepa/index.htm](http://www.mass.gov/envir/mepa/index.htm)



#### ***D. Other Laws that Affect Development in Massachusetts***

- ◆ Drinking Water Regulations, 310 CMR 22.00
- ◆ Forestry Management Practices, 304 CMR 11.01
- ◆ Ground Water Discharge Permit Program, 314 CMR 5.00
- ◆ Ground Water Quality Standards, 314 CMR 6.00
- ◆ Hazardous Waste Site Assessment/Cleanup, MGL c 21E, 310 CMR 40.00
- ◆ Massachusetts Environmental Policy Act, 301 CMR 11.00
- ◆ Massachusetts Endangered Species Act, MGL c. 131 A, 321 CMR 10.00
- ◆ Massachusetts Subdivision Control Law, MGL c 41 §§81K – 81GG
- ◆ Massachusetts Zoning Act, MGL c 40A
- ◆ National Pollutant Discharge Elimination System (NPDES) Stormwater Program, 40 CFR Part 122
- ◆ Subsurface Disposal of Sanitary Sewage (Title 5), 310 CMR 15.00
- ◆ Surface Water Discharge Permit Program, 314 CMR 3.00
- ◆ Surface Water Quality Standards, 314 CMR 4.00
- ◆ Wetlands Protection Act, 310 CMR 10.00
  - DEP Stormwater Management Policy (Administered through the Wetlands Protection Act)
  - Rivers Protection Act (Administered through the Wetlands Protection Act)

For a thorough list of state environmental laws, see the *Matrix of Primary Massachusetts Environmental Statutes and Regulations* on Department of Environmental Protection website, [www.mass.gov/dep/service/matrix.htm](http://www.mass.gov/dep/service/matrix.htm).

#### ***E. Additional DCR Division of Water Supply Protection Office of Watershed Management References***

The Office of Watershed Management is continuously monitoring the watershed system and planning for its long-term ability to provide a pure supply of drinking water. The following are publications that provide information on the status of the watersheds and DCR's management policies:

- ◆ Watershed Protection Plans
  - 2003 Wachusett Reservoir Watershed Protection Plan Update
  - 2000 Quabbin Reservoir and Ware River Watersheds Protection Plan Update
- ◆ Land Management Plans
  - 2003 Ware River Watershed Land Management Plan
  - 2001 Wachusett Reservoir Land Watershed Management Plan
  - 1995 Quabbin Reservoir Watershed Land Management Plan
- ◆ Public Access Management Plans
  - 2006 Quabbin Reservoir Watershed Public Access Management Plan Update
  - 2003 Wachusett Reservoir Watershed Public Access Management Plan Update
  - 2002 Sudbury Reservoir Watershed Public Access Management Plan Update
  - 2000 Ware River Watershed Public Access Management Plan Update
- ◆ Water Quality Reports
  - Wachusett Reservoir Watershed Annual Report
  - Quabbin Reservoir and Ware River Watershed Annual Report
  - Sanitary Surveys and Environmental Quality Assessments

Copies of these documents are available for review at the DCR Office of Watershed Management field offices listed under "Further Information on WsPA" or can be found on the DCR website, [www.mass.gov/dcr/waterSupply/watershed/water.htm](http://www.mass.gov/dcr/waterSupply/watershed/water.htm).

***F. Statutory Provisions***

A complete version of the Watershed Protection Act's regulations, 350 CMR 11.00, is available on the DCR website, [www.mass.gov/dcr/waterSupply/watershed/350CMR11.htm](http://www.mass.gov/dcr/waterSupply/watershed/350CMR11.htm).

A complete version of the Massachusetts Environmental Policy Act is available on the MEPA website, [www.mass.gov/envir/mepa/thirdlevelpages/meparegulations/meparegulations.htm](http://www.mass.gov/envir/mepa/thirdlevelpages/meparegulations/meparegulations.htm).

A complete version of the Standard Adjudicatory Rules of Practice and Procedure, 801 CMR 1.00, is currently available through the Massachusetts Trial Court Law Libraries website, [www.lawlib.state.ma.us/801cmr101-6.html](http://www.lawlib.state.ma.us/801cmr101-6.html).

An official copy of these regulations may be purchased from the Secretary of State, either on-line at [www.sec.state.ma.us/spr/sprcat/contents.htm](http://www.sec.state.ma.us/spr/sprcat/contents.htm), or in person at the following locations:

State Bookstore  
Room 116  
State House  
Boston, MA 02133  
(617) 727-2834

Western Office of the  
Massachusetts Secretary of State  
436 Dwight Street  
Springfield, MA 01103  
(413) 784-1376